USGS

# WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2003NY24B

**Title:** GIS Based Spatial Modeling and Analyses of Urban Stormwater Size and Stormwater Management Practice (SMP) Feasibility in the Lower Buffalo River Watershed.

**Project Type:** Research

**Focus Categories:** Non Point Pollution, Water Quality, Hydrology

**Keywords:** stormwater, runoff, urban stormwater

**Start Date:** 03/01/2003

**End Date:** 02/28/2004

**Federal Funds Requested:** $16245.00

**Matching Funds:** $21284.00

**Congressional District:** EditRegion12

**Principal Investigators:** Tang, Tao

**Abstract:** Problem:
The Buffalo River flows through the urbanized metro-Buffalo region, and feeds into Lake Erie in downtown Buffalo. The river transports large quantities of sediments and pollutants into the Lake Erie, in particular during urban storm runoff periods. This is in part due to the contaminated sediment discharge originating from the urban area and its inherent poor water quality. The International Joint Commission (IJC) has designated the Buffalo River as one of the areas of concern (AOC) in the Great Lakes Region. Urban storm water runoff is one of the major pollution sources identified in the Lower Buffalo River.

Methods:
Task 1: The SWCs will be delineated by contour line map (0.5 feet contour interval) of the Erie County Water Authority in combination with the USGS 7.5-minute digital elevation model (DEM).
Task 2: Field sampling sites for each of the storm water catchment areas will be selected. Field sampling and analyses will be conducted during two storm events. Three measuring sites per catchment area will be selected.
Task 3:</b> Map and overlay the parameters of five screening (feasibility) factors to suggest the most

suitable SMP tool or a group of SMP tools. The locations of SMP facility (facilities) will also be suggested through combined spatial analysis of land use, slope, and flow directions in each of the catchments.

A website will be developed to disseminate the framework procedures and results achieved in this project to the water resource managers and general public to facilitate the best management practices in various watersheds across the State of New York.

Objectives:
The project goals include:
(1) Acquire the baseline data on storm water runoff and water quality in each of the urban storm water catchments in the Lower Buffalo River watershed.
(2) Develop detail land use and other feasibility factor maps in the watershed to facilitate the feasibility analysis of SMP tool applications listed on the New York State Stormwater Management Design Manual. GIS and Remote Sensing will be used to produce the maps.
(3) Suggest the appropriate SMP tool applications to each of the SWCs in the Lower Buffalo River watershed according to spatial analysis of the feasibility factors.

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